

## Attachment 13 Stormwater Resources Plan

### Introduction

This attachment identifies and provides documentation of the applicable plans that make up a functionally-equivalent Stormwater Resources Plan for the City of San Francisco. The Cesar Chavez Street and Sunnydale Flood and Stormwater Management Sewer Improvement Projects both offer multiple benefits for stormwater management. The Cesar Chavez project will enhance stormwater and flood management in the Islais Creek basin, support Low Impact Development (LID) through implementation of green infrastructure such as stormwater planters, tree wells and permeable pavement along Valencia Street, and improve water quality by reestablishing natural water drainage treatment in the LID areas and reduce runoff volumes into the combined sewer, amongst other benefits. The Sunnydale project will enhance stormwater and flood management in the Sunnydale basin and improve water quality by increasing storage of flows for secondary treatment and reducing the volume of combined sewer discharge in the Sunnydale basin, along with other benefits described in previous sections.

The two projects included in this Proposal are in the San Francisco Public Utilities Commission (SFPUC) Wastewater Enterprise's Capital Improvement Program (WWE CIP). The WWE CIP is a parallel effort to the Sewer System Improvement Program (SSIP) and serves as an interim program until the SSIP projects are implemented. As part of the WWE CIP, and associated with the SSIP, the Cesar Chavez and Sunnydale projects exemplify projects that will immediately enhance the City's stormwater management through an integrated and multi-beneficial approach. Both projects are also influenced by, and planned accordingly with, several other stormwater resource-related plans and policies in San Francisco, including:

- Stormwater Management Plan,
- Non-Potable Water Policy,
- Stormwater Design Guidelines,
- Stormwater Management Demonstration Projects, and
- Better Streets Plan.

Collectively these plans, along with the WWE CIP and SSIP, provide guidance for the design and implementation of both projects that is consistent with a functionally-equivalent Stormwater Resource Plan. These plans are described below:

### Functionally Equivalent Plan

SFPUC does not have a single "Stormwater Resource Plan" but rather a collection of plans which cumulatively meet or exceed the standards of Part 2.3 of Division 6 of the California Water Code (CWC) and can be utilized as a functionally equivalent plan as outlined in CWC §15062(c). **Table 1** and the following pages describe the collection of plans and how they address the standards of Part 2.3 of Division 6 of the CWC. It should be noted that the SFPUC has adopted the existing Bay Area Integrated Regional Watershed Management Plan (IRWMP) and each plan described below is consistent with the Bay Area IRWMP. Both projects are included in the IRWMP (see Attachment 1).

### Wastewater Enterprise Capital Improvement Program

The Wastewater Enterprise Capital Improvement Program (WWE CIP) addresses immediate wastewater needs in the areas of flood control, odor control, and aging facilities. The WWE CIP is a parallel effort to the Sewer System Improvement Program (SSIP), which is a long-term plan to address the City's wastewater needs for the next 30 years. Ground breaking of the first SSIP capital project is not anticipated until 2013 in order to complete environmental review, planning, design and contracting efforts. Because a number of critical projects had already been identified to address the immediate needs of the wastewater system, the SFPUC allocated \$150 million in the Spring of 2005 for the WWE CIP Program to begin work on these projects addressing aging infrastructure, odor mitigation and potential flooding in various areas of the City. Over the past five years, the WWE CIP has improved the reliability and efficiency of the wastewater system by:

- Maximizing the collection and conveyance of sewage and storm water;
- Protecting public health and safety;
- Maximizing control of odor emissions;
- Improving reliability of critical treatment facilities; and
- Reducing future repair and replacement costs.

### Sewer System Improvement Program & Urban Watershed Framework

The City of San Francisco has a combined sewer system so wastewater and stormwater management are administered concurrently. The SSIP is a collection of capital improvement projects that will help the Wastewater Enterprise meet SFPUC's level of service goals for regulatory permit compliance, system reliability and functionality, and ensure sustainable operations of the City's combined sewer system to address the following systemwide challenges:

- Aging infrastructure and poor condition of existing facilities with little remaining useful life;
- Seismic deficiencies and lack of structural integrity;
- Limited operating flexibility and lack of redundancy; and
- The ongoing need to protect the environment and public health, meet regulatory challenges, and conserve resources.

The SSIP will follow an Urban Watershed Framework (UWF) which will involve a multi-stakeholder analysis of each of the eight major sub-watersheds (drainage basins) in San Francisco. The purpose of the UWF is to identify and implement opportunities to integrate green and gray infrastructure to develop multi-purpose projects and programs in order to meet the City's wastewater, stormwater and water supply, and energy objectives in a manner that optimizes environmental, social and economic (triple-bottom line) benefits. The UWF is intended to be a transparent, repeatable process for developing projects that fulfill SFPUC's mission and incorporate stakeholder interests and concerns. The UWF and SSIP constitute a large part of the City's Stormwater Resource Plan equivalency.

Table 1: San Francisco's Existing Planning Documents Constituting a Functionally Equivalent Stormwater Resources Plan

	Wastewater Enterprise Capital Improvement Projects	Sewer System Improvement Program & Urban Watershed Framework	Stormwater Management Plan	Non-Potable Water Policy	Stormwater Management Ordinance/ Stormwater Design Guidelines	Stormwater Management Demonstration Projects	Better Streets Plan
Watershed Basis		X				X	
Multiple Benefits	X	X	X	X	X	X	X
Community Participation		X	X		X	X	X
TMDL/NPDES Permit Compliance	X	X	X		X	X	
Consistent with Waste Discharge Permits	X	X	X	X	X	X	X
Consistent with IRWMP	X	X	X	X	X	X	X
Identifies opportunities to augment local water supplies		X		X		X	
Source control of stormwater, infiltration and reuse		X	X	X	X	X	X
Reestablish natural water drainage treatment		X	X		X	X	X
Enhance habitat		X	X		X	X	X
Design criteria for stormwater BMPs			X		X		X
Identifies activities that contribute to stormwater pollution or impair beneficial reuse	X	X	X	X	X	X	X
Includes projects and programs to ensure effective implementation	X	X	X	X	X	X	X
Low-impact development for new and upgraded infrastructure		X	X	X	X	X	X

### Stormwater Management Plan

SFPUC, in consultation with the San Francisco community, has developed a Stormwater Management Plan (SWMP) to manage stormwater in the 10% of the City that is served by separate storm and sewer collection systems. The SWMP describes specific programs that the SFPUC will implement to minimize stormwater pollution in these areas. The SWMP has been developed, and is being implemented, to ensure that San Francisco is in compliance with State "Phase II" regulations, which municipalities must comply with in order for stormwater discharges to be covered under the State's General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems. The California Regional Water Quality Control Board (RWQCB) approved the City and County of San Francisco Stormwater Management Plan (SWMP) in January of 2004. Each year a SWMP Annual Report is submitted to the RWQCB to provide an update on the progress made by the SFPUC in implementing the measures and programs set forth in the SWMP.

The SWMP describes Best Management Practices (BMPs) that are aimed at fulfilling the following minimum control measures for the relevant SWMP areas: Public Education, Public Involvement/Participation, Illicit Discharge Detection and Elimination, Construction Site Stormwater Runoff Control, Post-Construction Stormwater Management in New Development and Redevelopment, and Pollution Prevention/Good Housekeeping for Municipal Operations. In the process of fulfilling the Phase II requirements the SWMP also addresses many of the Stormwater Resource Plan (CWC §15062) standards. The SWMP is specifically aimed at addressing discharges and discharge permits, which also draw upon TMDLs for establishing discharge targets. The Plan also has a large public outreach component through which LID, habitat enhancement and stormwater source control projects are supported and encouraged.

### Non-Potable Water Policy

To diversify the water supply portfolio, the SFPUC has begun to develop local water supplies. To accomplish this diversification, the SFPUC seeks to promote sustainable water use in San Francisco by creating a decision-making framework to promote the most efficient and sustainable use of all available and future water supply sources to meet customer demands for clean, safe and reliable water. Potential non-potable water sources in San Francisco include recycled water, rainwater, stormwater, graywater, sump water, and cooling tower blow down. In addition to furthering the local resource development goal set forth in Commission Resolution No. 08-200, promoting sustainable water use serves as a vehicle to support activities that help meet the following goals:

- To advance the most sustainable water uses in San Francisco;
- To help increase water supply reliability for San Francisco; and
- To reduce the amount of inflow to the sewer system and the volume of wastewater discharged to San Francisco Bay and the Pacific Ocean.

The Non-Potable Water Policy serves as a guiding document for the SFPUC for promoting the most efficient and sustainable use of all available and future water supply sources to meet customer demands for clean, safe and reliable water. The policy incorporates multiple benefits, augments local water

supplies, identifies activities that impair beneficial reuse of stormwater, and encourages local stormwater reuse and LID activities.

### **Stormwater Management Ordinance/Stormwater Design Guidelines**

The SFPUC has developed, with significant public involvement, the Stormwater Design Guidelines (SDG) and the accompanying Stormwater Management Ordinance to comply with the NPDES stormwater permit, the San Francisco Green Building Ordinance and the Stormwater Management Ordinance. For projects disturbing more than 5,000 square feet, these guidelines provide design criteria, and planning and sizing guidance for onsite stormwater management techniques. The SDG include provisions for onsite reuse of stormwater and contains a vegetation pallet which highlights which plant choices are water conserving, locally significant and provide habitat. The stormwater BMPs described within the SDG and Stormwater Management Ordinance increase infiltration, improve water quality, increase the use of Low Impact Development (LID) and require that the City be consistent with its discharge permits.

### **Stormwater Management Demonstration Projects**

The SFPUC's Urban Watershed Management Program has partnered with the City's Community Challenge Grant Program to offer grants for community-based projects which help manage stormwater using ecologically based strategies known as green infrastructure. The Watershed Stewardship Grant Program grants are based on the idea that small actions by community members can add up to large benefits for San Francisco's watersheds and sewer infrastructure. The grants support the planning, construction and maintenance of green stormwater management facilities. Projects harvest rainwater, remove impervious surfaces, or implement other green infrastructure features. In addition to managing stormwater, projects beautify neighborhoods, provide recreational opportunities, and educate residents about the city's water and wastewater systems. The program represents an alternative, community-driven effort to meet stormwater standards included in a Stormwater Resource Plan.

### **Better Streets Plan**

The Better Streets Plan (BSP) creates a unified set of standards, guidelines and implementation strategies to govern how the City designs, builds and maintains its pedestrian environment. The BSP process brings together staff from multiple City agencies to comprehensively plan for streets. The Plan reflects the understanding that the pedestrian environment is about much more than just transportation – streets serve a multitude of social, recreational and ecological needs that must be considered when deciding on the most appropriate design. The SFPUC has been a major funder and partner of this project in order to ensure that new street designs accommodate green stormwater management infrastructure.

The BSP includes Stormwater Management Tools for improving stormwater quality and quantity, adding health and value to the urban ecology, adding aesthetic value to the city and combining with other streetscape objectives such as traffic calming. The BSP represents another planning effort that addresses many of the standards of a Stormwater Management Plan, including: multiple benefits, community participation, source control of stormwater infiltration and reuse, reestablishing natural water drainage treatment, enhancing habitat, outlining design criteria for BMPs, identifying activities that generate stormwater pollution or impairment, and supporting LID techniques.

## Plan Excerpts

The following section provides excerpts from the applicable Plans described above that demonstrate all of the standards of Part 2.3 (commencing with Section 10560) of Division 6 of the CWC.

### Wastewater Enterprise Capital Improvement Projects

**Source: WWE CIP Quarterly Report, Q2 FY 2010/2011**

**Pg 1, Multiple Benefits, TMDL Implementation, Consistent with Waste Discharge Permits, Identifies Activities That Contribute to Stormwater Pollution and Includes Projects to Ensure Effective Implementation of Stormwater Resource Plan:**

*The Wastewater Capital Improvement Program (WWE CIP) addresses immediate wastewater needs in the areas of flood control, odor control, and aging facilities. The WWE CIP is a parallel effort to the Sewer System Improvement Program (SSIP), which is a long-term plan to address the City's wastewater needs for the next 30 years. Ground breaking of the first SSIP capital project is not anticipated until 2013 in order to complete environmental review, planning, design and contracting efforts. Because a number of critical projects had already been identified to address the immediate needs of the wastewater system, the SFPUC allocated \$150 million in the Spring of 2005 for the WWE CIP Program to begin work on these projects addressing aging infrastructure, odor mitigation and potential flooding in various areas of the City. Over the past five years, the WWE CIP has improved the reliability and efficiency of our wastewater system by:*

- *Maximizing the collection and conveyance of sewage and storm water;*
- *Protecting public health and safety;*
- *Maximizing control of odor emissions;*
- *Improving reliability of critical treatment facilities; and*
- *Reducing future repair and replacement costs.*

*The projects identified in the WWE CIP are divided into four major categories:*

- 1) Odor Control;*
- 2) Treatment Facilities;*
- 3) Pump Stations; and*
- 4) Sewer/Collection System Projects.*

*The Sewer/Collection system projects will enhance the collection and conveyance of sewage and storm water in San Francisco. The completed projects will increase sewer capacity, allowing more flow to be captured and transported to the wastewater treatment plants. Seventy percent of the sewer pipes in San Francisco are over 70 years old. Replacing and increasing the sizes of sewer pipelines throughout the City would enhance the reliability of the sewer collection system. These projects are expected to offset some Repair and Replacement costs by replacing and enlarging the existing sewers. The Odor/Treatment/Pump Stations projects will enhance odor controls, ensure reliability of critical equipment and improve structural integrity at treatment facilities and pumping stations. Projects at the Southeast Treatment Facility are mostly related to odor control and reliability. Projects at the Oceanside*

*Treatment Facility are for controlling corrosion, improving HVAC, and meeting biosolids disposal requirements. Pump station projects are related to improving reliability and efficiency.*

### **Sewer System Improvement Program & Urban Watershed Framework**

**Source: San Francisco Sewer System Improvement Program (SSIP) Report (August 10, 2010)**

**Pg 12**, Consistent with Waste Discharge Permits and TMDL Implementation Plan:

*The U.S. EPA, through the Clean Water Act and the State of California regulates SFPUC wastewater effluent and stormwater discharges and protects State and Federal receiving water quality. The NPDES permit program provides the framework that allows the SFPUC to discharge treated wastewater effluent and surface stormwater flows to State and Federal receiving waters. The National Oceanographic and Atmospheric Administration is responsible for protecting and managing the natural and biological resources in designated sanctuary waters. The Gulf of the Farallones National Marine Sanctuary issues a permit to the SFPUC that allows required NPDES receiving water monitoring activities in the Monterey Bay National Marine Sanctuary waters.*

**Pg 25**, Watershed Basis, Multiple Benefits, TMDL Implementation Plans, Consistent with Waste Discharge Permits, Augments Local Water Supplies, Source Control of Stormwater Infiltration and Reuse, Reestablish Natural Water Drainage Treatment, Enhance Habitat, and Supports Low Impact Development Techniques:

*The City's wastewater management system consists of streets, curbs and gutters, inlets, catch basins, pipes, trunk lines, transport storage structures, pumping systems, treatment plants, solids handling facilities and discharge outlets. Components of this system are present in virtually every neighborhood in San Francisco and closely follow the city's natural drainage patterns formed by soils, topography, and gravity. The SFPUC operates this system using an integrated watershed management approach to:*

- *protect the water quality of the San Francisco Bay and Pacific Ocean;*
- *maximize sewer system performance by slowing and reducing the amount of stormwater entering the sewer;*
- *revitalize natural watershed functions;*
- *promote infiltration and groundwater recharge;*
- *promote use of stormwater for nonpotable purposes;*
- *reduce the amount of power & chemicals needed to manage stormwater;*
- *enhance the environmental quality of San Francisco's neighborhoods; and*
- *adapt our City for climate change.*

**Pg 26 – 28**, Watershed Basis, Multiple Benefits, TMDL Implementation Plans, Consistent with Waste Discharge Permits, Augments Local Water Supplies, Source Control of Stormwater Infiltration and Reuse, Reestablish Natural Water Drainage Treatment, Enhance Habitat, Identifies Activities that Contribute to Stormwater Pollution or Impair Beneficial Stormwater Reuse, and Supports Low Impact Development Techniques:

***Strategic Planning for Control, Treatment, Discharge, Diversion, and Reuse of Sewage and Stormwater***

*As implemented by the SFPUC, sewer system strategic planning integrates all design elements and alternatives to optimize system performance and achieve established levels of service. Planning for the repair, replacement, operations, and management of all aspects of the system, including development of policies, strategies, procedures, and projects, optimizes the performance of the system while offering opportunities to reduce the ecological footprint of the system. The benefits of integrated watershed planning include improved long-term efficiencies associated from collaborative planning, increased focus of staff and financial resources to collaborate on priority projects and improved, site-specific solutions, and increased opportunities for community participation and leadership for long-term stewardship.*

***Stormwater Controls***

*The stormwater management controls consist of the City's recently enacted Stormwater Management Ordinance and the SFPUC's stormwater regulations, known as the Stormwater Design Guidelines, and comply with Federal and State stormwater permit requirements. The ultimate purposes of the stormwater management controls are to maximize pervious surfaces, minimize stormwater runoff, and treat stormwater runoff using Low Impact Design (LID) techniques. New and redevelopment projects that disturb greater than 5000 square feet of ground surface are required to incorporate on-site stormwater management in the projects; the stormwater management controls guidelines will affect the way a project is designed, from the inception to the final design and construction of the project. Developers must design projects to retain, detain, or reuse the stormwater generated on-site using the Stormwater Design Guidelines to achieve those goals. SFPUC will review projects and enforce the controls to ensure that all stormwater projects have proper maintenance plans.*

***Watershed Stewardship***

*Watershed stewardship plays a critical role in achieving the SFPUC's long-term goals for integrated watershed management. The design and development community, nonprofit community, and San Francisco residents can be effective partners in working toward enhanced watershed function and water quality protection. Their participation is facilitated by the following SFPUC activities:*

- *watershed stewardship grants;*
- *watershed stewardship curriculum;*
- *rainwater harvesting program;*
- *LID speakers series; and*
- *demonstration projects.*

***Source Control Program (Pollution Prevention and Industrial Pretreatment)***

*SFPUC's long-standing Source Control Program is effective in minimizing pollutants entering the City's sewer system from businesses, homes, and stormwater runoff. The Source Control Program has two elements — the Industrial Pretreatment Program (Pretreatment Program) and the Water Pollution Prevention Program (P2 Program) — and is the first line of defense in protecting the water quality of the*

*bay and ocean waters, in assuring compliance with State and Federal wastewater discharge permits and water quality standards, and in protecting residents and City workers from potential exposure hazards.*

*The Pretreatment Program focuses on controlling wastewater discharges from industrial and commercial establishments through permitting, monitoring, and enforcement. The program is also responsible for monitoring, preserving, and improving the beneficial reuse of municipal biosolids, industrial sludge, and other wastewater residuals.*

*The P2 Program focuses on providing education and technical assistance to residents, students, small businesses, and City employees. Key areas addressed are: lawn and garden care without the use of chemicals; home cleaning with less toxic cleaners; auto care and maintenance tips to reduce stormwater pollution; proper disposal of pet wastes, household and garden care chemicals, and hazardous wastes; and control of sediment and pollutant runoff from construction sites and outside storage areas of local businesses.*

### **Climate Change Adaptation**

*Increases in sea level have occurred to the extent that during extremely high tides some of the bayside overflow weirs on the combined sewer discharge structures become briefly submerged. The flow of bay water into the system during such events can degrade the sewer system, the treatment processes and the quality of effluent discharged from the treatment plants. According to predictions, the duration and frequency of bay water flow into the sewer system will increase in the coming years. The SFPUC's integrated watershed management approach to planning will address climate change adaptation as further information on the effects of sea level rise is developed.*

*Climate change concerns include the potential changes in weather patterns and the intensity and duration of rainfall. Currently, no data clearly supports a particular trend in rainfall patterns; however, storm trends will be monitored and assessed for each City watershed.*

### **Research and Development of New and Sustainable Technologies**

*SFPUC's integrated watershed management approach to planning includes the development and implementation of new and sustainable technologies. Staff is reviewing new developments in sewage treatment, solids management and reuse, energy production from waste gases and fats, oil, and grease, and other research efforts related to sewer systems.*

### **Monitoring and Development of New Regulatory Compliance Criteria**

*The SSIP is based on system requirements necessary to ensure compliance with current and reasonably foreseeable future criteria for the regulation of sewage discharges and biosolids disposal. The Wastewater Enterprise Planning and Regulatory Compliance Division tracks pending and potential regulatory requirements, and participates in the development of both regulatory criteria and compliance implementation plans. System operations are re-evaluated in accordance with the NPDES permit cycle process, which may result in changes to capital improvement projects.*

**Pg 28**, Multiple Benefits, Community Participation, TMDL Implementation Plans, Compliant with Waste Discharge Permits, Augments Local Water Supplies and Supports LID Techniques:

**Guiding Principles**

- *Protect public health, safety, and the environment.*
- *Ensure the long-term sustainability and reliability of the sewer system.*
- *Minimize sewer system burdens on all sectors of the community and ensure that no sector of the community bears a disproportionate share of the burdens of system operations.*
- *Promote environmental stewardship, including the sustainable use of natural resources.*
- *Address the effects of climate change on the wastewater collection and treatment facilities.*
- *Where technically and economically feasible, develop and implement new technologies to treat wastewater and biosolids in an efficient, sustainable, and environmentally benign fashion.*
- *Maximize employment and educational opportunities.*

**Pg 36**, Includes Projects and Programs to Ensure Effective Implementation of Stormwater Resource Plan and Supports LID Techniques:

**Low Impact Design**

*New techniques for managing urban stormwater runoff are becoming accepted as the preferred method for cities to manage the impacts of development on receiving water bodies. Low Impact Design (LID) techniques are also called green infrastructure or stormwater best management practices. Strategic daylighting of creeks that have been entombed in the combined collection system can dramatically reduce volumes of stormwater entering the combined collection system and reclaim existing capacity. LID can also include systems to slow down the flow of water, while providing other amenities such as increased green areas and systems designed to trap rainwater for storage and reuse. Cistern systems can be designed to capture rainwater for irrigation or reuse within buildings. Rainwater capture would have the additional benefit of reducing potable water demand if the stormwater was reused. Capital projects have been defined to achieve flooding relief through the daylighting of four creeks:*

- *Islais Creek*
- *Yosemite Creek*
- *Pine Creek*
- *Brotherhood Creek*

**Pg 29**, Community Participation:

*The five-member SFPUC Commission provided policy-level direction and review throughout the planning process and at key milestones. WWE staff presentations to the SFPUC were open to the public. Commission study sessions and workshops held between 2005 and 2008 provided an overview of the planning process and the results of baseline public opinion research.*

*Over the last nine months, workshops focused on refining the SFPUC's goals and developing measurable levels of service to assist the staff and public to clearly define the projects in the SSIP. At the conclusion of this process, the Commission will consider endorsement of clearly defined levels of service as guidance for further planning and design of capital improvement projects. Based upon the levels of service, the scope, schedule, and budget for capital improvements will be refined and developed in sufficient detail for final approval.*

**Source: Urban Watershed Framework (Draft Brochure, March 2011)**

**Pg 1,** Includes Projects and Programs to Ensure Effective Implementation of the Stormwater Resource Plan:

*One of the most important functions of the Urban Watershed Framework is to facilitate communication. UWF is expected to improve external communications by providing a mechanism for incorporation stakeholder interests from the earliest stages of project development. Similarly, UWF is expected to improve internal communications by formalizing the ways in which the concerns of different SFPUC departments are addressed through projects. Better communication will result in better projects that can be implemented more efficiently.*

**Pg 1,** Watershed Basis, Multiple Benefits, Community Participation, Source Control of Stormwater Infiltration:

*Managing our water resources from an integrated watershed-approach acknowledges the interconnectedness of the hydrologic cycle – from precipitation to infiltration, storage, groundwater recharge and stormwater runoff. Evaluating and understanding these interrelationships enables the SFPUC to make better decisions about how to economically manage San Francisco's water resources, while simultaneously improving the livability and environmental sustainability of our neighborhoods. Watershed-based planning recognizes that when stormwater is properly managed, it is a valuable resource for non-potable water use, recharging groundwater, and sustaining ecosystems. The watershed approach also engages communities at a local level, enabling feedback from the people most directly affected by SFPUC projects.*

**Stormwater Management Plan**

**Source: SFPUC Stormwater Management Plan (2003-2004)**

**Pg 1,** Community Participation, TMDL Implementation Plans, Consistent with Waste Discharge Permits, Identifies Activities That Contribute to Stormwater Pollution and Supports Design Criteria for Stormwater BMPs:

*The purpose of this SWMP is to describe SFPUC's plans for its Storm Water Management Program in fiscal year 2003-2004. The plan describes a suite of programmatic elements SFPUC will implement, or is in the process of developing for implementation. Together, these programmatic elements address the six minimum control measures required under the new "Phase II" storm water regulations as shown below:*

1. **Public Education** – *The Permittee must educate the public in its permitted jurisdiction about the importance of the storm water program and the public’s role in that program.*
2. **Public Involvement / Participation** – *The Permittee must comply with all state and local notice requirements when implementing a public involvement/participation program.*
3. **Illicit Discharge Detection and Elimination** – *The Permittee must adopt and enforce ordinances or take equivalent measures to prohibit illicit discharges. The Permittee must also implement a program to detect illicit discharges.*
4. **Construction Site Storm Water Runoff Control** – *The Permittee must develop a program to control the discharge of pollutants from construction sites greater than one acre in size within its permitted jurisdiction.*
5. **Post-Construction Storm Water Management in New Development and Redevelopment** – *The Permittee must require long-term post-construction best management practices (BMPs) that protect water quality and control runoff flow, to be incorporated into development and significant redevelopment projects.*
6. **Pollution Prevention / Good Housekeeping for Municipal Operations** – *The Permittee must examine its activities and develop a program to prevent the discharge of pollutants from these activities. At a minimum, the program must educate staff on pollution prevention and minimize pollutant sources.*

**Pg 17, Supports Design Criteria for Stormwater BMPs:**

*The SWMP must describe the best management practices, time schedules of implementation, and associated “measurable goals” that will fulfill specific regulatory requirements for each of the minimum control measures. Measurable goals will be used by SFPUC and the Regional Board to evaluate the effectiveness of individual control measures and the Storm Water Management Program as a whole. Both the Federal regulations and the State General Permit are written with the assumption that timely and effective implementation of best management practices will protect water quality, and constitutes compliance with the standard of reducing pollutants to the maximum extent practicable.*

**Source: Stormwater Management Plan Annual Report - 2009**

**Pg 3, Watershed Basis:**

*Due to the fact that the current MS4 areas under the SFPUC’s jurisdiction are small and in disparate locations, and that some very large separate storm sewer areas are expected to come under the City’s ownership in the future, the SFPUC has taken a common sense and long-term approach toward implementing the SF SWMP. The SFPUC is developing an aggressive MS4 stormwater program which reflects the fact that the SFPUC is prepared to address the future, when larger areas (such as current redevelopment areas) will be covered under the City’s Phase II General Permit. Accordingly, SFPUC’s approach in developing the SF SWMP programs has been to ensure that the small existing MS4 areas are being addressed, while concurrently developing aggressive, citywide programs and requirements which will eventually apply to all storm drains in the City – those is areas served by either combined storm/sewer systems or separate systems.*

**Pg 19, Includes Projects and Programs to Ensure Implementation of Stormwater Management Plan:**

*The SFPUC selects measurable goals that are appropriate for the activity being measured. Goals may be for completion of a simple one-time activity or of a large objective, or they may measure level of effort or level of effectiveness. For some activities, such as planning and development, simple completion goals are most appropriate. For other activities, level of effort and level of effectiveness may be more appropriate.*

*Refinement of Measureable Goals: The SFPUC is committed to evaluating and refining its pollution prevention efforts. With this continuum in mind, and as stated in the SF SWMP, the SFPUC has instituted an adaptive management process for reviewing and refining its measurable goals. For each Minimum Control Measure, this will be achieved through a “Refinement of Measurable Goals” task. The task involves reviewing goals for each Control Measure annually and with information gained (in program planning, working groups, work plan development, and implementation), revising and refining goals (as needed) to make them more measurable/numeric and effective.*

**Pg 35, Community Participation and Supports LID Techniques:**

*SFPUC staff continued to host lectures as a part of the Low Impact Development (LID) Speakers Series. The LID Speakers Series aims to bring innovative new ideas about stormwater management to SFPUC staff, the design community, and the public by inviting speakers to present their ideas in a lunch time lecture.*

**Pg 88, Multiple Benefits, Augments Local Water Supplies, Source Control of Stormwater Infiltration and Reuse, Reestablish Natural Drainage Treatment, Enhance Habitat and Supports LID Techniques:**

*In giving technical assistance, SFPUC staff attempts to convey the multiple opportunities that LID offers not only for stormwater management, but also for neighborhood improvement, urban design innovation, and habitat creation. Table 22 lists active projects and plans that have sought technical assistance from SFPUC staff to implement stormwater management into the designs of these projects.*

**Non-Potable Water Policy**

**Source: Letter from SFPUC AGM Water to SFPUC Commission on Sustainable Water Use in San Francisco**

**Pg 2, Includes Projects and Programs to Ensure Implementation of Stormwater Resource Plan, Augments Local Water Supplies, and Multiple Benefits:**

*There are four key elements to accomplishing the goals of advancing sustainable water use in San Francisco, increasing water supply reliability and reducing the amount of inflow to the sewer system and the volume of wastewater discharged to San Francisco Bay and the Pacific Ocean. They are:*

- 1) *SFPUC-funded activities that develop local water supply alternatives;*

- 2) *Incentives such as rebates, giveaways, audits, technical assistance, subsidies and grants that encourage customers to make optimal use of existing and planned supplies, and reduce impacts on existing water and wastewater infrastructure.*
- 3) *Public education and outreach efforts to increase awareness of water supplies and uses; and*
- 4) *A method to help screen and evaluate alternative water supplies in planning new activities and awarding grants, aimed at fitting the best water resource to the given use, taking into account economic, environmental and social factors.*

*Together, these elements - some existing and some new - represent a comprehensive management approach to implementation of the Phased WSIP Variant objectives. Through better coordination within the SFPUC, among City departments, and with water users, the SFPUC can leverage these efforts to maximize the sustainable use of available water sources.*

**Pg 3 – 5, Multiple Benefits, Augments Local Water Supplies, Consistent with Waste Discharge Permits, Source Control of Reuse, Identifies Activities that Contribute to Stormwater Pollution or Impair Beneficial Reuse and Supports LID Techniques:**

### ***Recycled Water***

*The SFPUC is currently proposing development of a number of recycled water projects primarily for the landscape irrigation needs of its customers in San Francisco. In addition, recycled water would be used for various other uses such as toilet flushing and cooling. Developing recycled water provides a drought-resistant and sustainable water source. Recycled water would decrease demands on existing drinking water supplies, diversify San Francisco's local water supply sources, and increase the San Francisco Regional Water System's reliability. Using recycled water would also reduce the amount of treated wastewater that is discharged to the Pacific Ocean and San Francisco Bay.*

*The proposed San Francisco Recycled Water Program currently includes the Westside Recycled Water Project, Harding Park Recycled Water Project, the Pacifica Recycled Water Project and the Eastside Recycled Water Project. Each of these projects replaces potable water with recycled water for irrigation use. Through this Program, the SFPUC will continue to explore and develop new recycled water opportunities.*

### ***Rainwater***

*The collection and use of rainwater from roofs, courtyards and patios for applications such as irrigation and toilet flushing can reduce the demand for drinking water and reduce the stormwater flows in the combined sewer system. The SFPUC provides a rainwater harvesting subsidy in partnership with local vendors where San Francisco residents can purchase rain barrels and cisterns at discounted prices. The 2010 subsidy offers \$30 off for one rain barrel and \$50 off for each additional barrel, up to 10. The same discount may be applied to cisterns. The SFPUC maintains records of the number of rainwater harvesting containers sold and their locations. The budget for subsidies in 2010 is \$15,000. A Rainwater Harvesting Technical Manual will be available to the public in the summer of 2010.*

**Stormwater**

*The SFPUC supports good management practices so that water that accumulates on land as runoff and would otherwise flow into the sewer system can be put to more productive uses such as irrigation. The SFPUC offers Urban Watershed Stewardship Grants in partnership with the Community Challenge Grant Program (CCG). These grants support planning, design, construction and maintenance activities implementing green stormwater management practices in San Francisco communities, also known as Low Impact Design (LID). The grants are based on the concept that small individual actions by San Francisco watershed stewards can add up to large benefits for San Francisco's watersheds and sewer infrastructure.*

**Graywater**

*Wastewater generated from common residential uses such as washing machines, non-kitchen sinks, and bathtubs can be used for some types of irrigation. The SFPUC is interested in promoting the use of graywater among residential, commercial and municipal customers for small-scale and large-scale applications. To this end, the SFPUC is proposing a phased approach to encourage graywater implementation. The first phase includes development of a graywater manual and exploration of a customer subsidy for simple laundry to yard systems for single-family residential customers. Subsequent phases would include consideration of technical and financial assistance for more complex systems and for additional customers.*

**Sump Water / Non-Potable Groundwater**

*The SFPUC maintains a partial list of customers that permanently discharge drainage collected from basements, pits and tunnels into San Francisco's sewer system. Depending on the quality of the water that is available, the diversion of this water from the sewer represents a potential reuse opportunity for irrigation, vehicle washing, or other non-potable uses.*

**Cooling Tower Blow Down**

*Cooling towers rely on evaporation to transfer heat. The evaporation results in increasing concentrations of dissolved solids and other impurities in the water circulating in a cooling tower. Cooling tower blow down is the amount of water drained from a cooling tower to maintain the amount of dissolved solids and other impurities at an acceptable level in the tower. Blow down is typically discharged into the sewer system but can potentially be recovered and put to other uses, similar to graywater.*

**Stormwater Management Ordinance/Stormwater Design Guidelines**

**Source: San Francisco Stormwater Design Guidelines (November 2009)**

**Pg 1, Community Participation & Consistent with Discharge Permits:**

*In February 2007, Port and SFPUC staff initiated a community planning effort to develop a regulatory guidance document that fulfills state and federal requirements for post-construction stormwater runoff control. The San Francisco Stormwater Design Guidelines represent the culmination of this effort.*

**Pg 2, Low Impact Design:**

*In keeping with San Francisco's policy goals for promoting sustainable development, the Guidelines encourage the use of Low Impact Design (LID) to comply with stormwater management requirements.*

**Pg 3, Identifies Activities that Contribute to Stormwater Pollution:**

*Every applicant seeking a building permit or every project that requires compliance with California Environmental Quality Act (CEQA) process on or after January 1, 2010 for a new or redevelopment project over 5,000 square feet must complete a Stormwater Control Plan (SCP) showing that they have incorporated appropriate stormwater controls into their project and have met the stormwater performance measures described in these Guidelines.*

**Pg 5, Enhance Habitat:**

*Expanding the City's urban forest with careful attention to species selection would simultaneously address stormwater issues, increase wildlife habitat, improve air quality, and create a network of green corridors that would contribute to the aesthetics and health of the City's neighborhoods. Habitat can also be created by implementing stormwater BMPs on the roofs and walls of buildings.*

**Pg 26, Multiple Benefits (through LIDs):**

*Vegetated roofs and landscaped areas minimize the amount of stormwater runoff. BMPs are incorporated into the fabric of the city, doubling as recreational areas, wildlife habitat, and landscaping. These measures may increase initial capital costs (approximately 3%), but they bring multiple benefits to the site and the city: not only do they protect water quality and provide open space, they may also decrease downstream stormwater infrastructure costs because they lessen stormwater flows and volumes.*

**Pg 26, Source Control of Infiltration & Reestablish Natural Water Drainage Treatment:**

*LID aims to mimic pre-development drainage patterns and hydrologic processes by increasing retention, detention, infiltration, and treatment of stormwater runoff at its source. This decentralized approach not only treats stormwater at its source and facilitates the best and highest use of stormwater; it also allows greater adaptability to changing environmental conditions than do centralized conveyance systems.*

**Pg 68, Inspection & Enforcement:**

*Once stormwater management facilities are incorporated into new development and redevelopment projects, the SFPUC and Port require periodic inspections to ensure that they are properly maintained and continue to provide effective stormwater treatment. There are three types of inspections under this operation and maintenance verification program: postconstruction building permit inspections, annual self-certification inspections conducted by the property owner, and tri-annual inspections conducted by the Port or the SFPUC, depending on who has jurisdiction on the site. The Port and the SFPUC will also inspect BMPs in response to complaints or emergencies.*

**Appendix A & B, Design Criteria for BMPs:**

*The Fact Sheets in this appendix describe Stormwater Best Management Practices (BMPs), also known as stormwater controls or stormwater management facilities, that can be used to meet the stormwater management requirements in the Guidelines.*

**Stormwater Management Demonstration Projects****Source: Urban Watershed Stewardship – Grant Funding Criteria****Pg 1, Community Participation:**

*The Watershed Stewardship Grant Program is a subset of the City's larger Community Challenge Grant Program and is funded by the San Francisco Public Utilities Commission (SFPUC).*

*Does the project offer neighborhood residents the opportunity to participate in the plan, design, implementation, or maintenance phases of the project?*

**Pg 1, Watershed Basis & Design Criteria for BMPs:****PROJECT MUST INCLUDE ALL OF THE FOLLOWING ELEMENTS TO RECEIVE SFPUC FUNDS**

- *Does the application include a conceptual plan view of the project, drawn to scale?*
- *Does the application include an adequate long-term maintenance plan?*
- *Are the project goals clearly expressed?*

**GEOGRAPHIC DISTRIBUTION, DEMONSTRATION, & PUBLIC ACCESS/PARTICIPATION**

- *Has this community/applicant received a Community Challenge Grant (CCG) in the past?*
- *Has this area benefited from projects funded by the CCG Program in the past?*
- *Have applicants received funds from the SFPUC before? Priority will be given to as of yet unserved applicants.*
- *Has the proposed stormwater management technique been demonstrated in San Francisco?*

**Pg 1 & 2, Support LIDs, Multiple Benefits, TMDL Implementation Plans, Consistent with Waste Discharge Permits, Augments Local Water Supplies, Source Control of Infiltration and Reuse, Reestablish Natural Water Drainage Treatment, Enhance Habitat, Design Criteria for BMPs, Identify Activities that Contribute to Stormwater Pollution, Includes Projects and Programs to Ensure Effective Implementation of Stormwater Resource Plan:**

**PROJECT MUST INCLUDE ONE OF THE FOLLOWING ELEMENTS TO RECEIVE SFPUC FUNDS:**

- *Does the applicant propose to harvest and use rainwater?*
- *Does the applicant propose to install green stormwater management facilities?*
- *Does the applicant propose to remove impermeable surfaces and replace them with pervious surfaces or plantings?*

**BENEFIT TO THE ENVIRONMENT:**

- *Does the project aim to reduce water consumption during the preparation, installation and lifetime maintenance of the project?*
- *Does the project aim to reuse appropriate materials and resources during the preparation, installation and lifetime maintenance of the project?*
- *Does the project aim to recycle materials and resources and/or to use recyclable materials during the preparation, installation and lifetime maintenance of the project?*

### Better Streets Plan

**Source: San Francisco Better Streets Plan (December 2010)**

**Pg 12, Community Participation:**

*In order to create the Better Streets Plan, the Better Streets Team conducted significant community involvement efforts to present plan concepts and gather public input. Over five rounds of community involvement, the Better Streets Team held over 100 community meetings, and received over 1,000 responses to two Better Streets Plan surveys.*

**Pg 187, Identifies Activities That Generate Stormwater Pollution:**

*Concrete, asphalt, building roofs, and parking lots all prevent rainfall from absorbing into the ground. Instead, this rainfall collects into runoff, accumulating chemicals, oil, metals, bacteria, and other by-products of urban life. Left untreated, this polluted runoff contaminates the ecosystems of the bay and the ocean.*

**Pg 188, Multiple Benefits, TMDL Implementation Plans, Consistent with Waste Discharge Permits and Enhances Habitat:**

*In addition to its impact on stormwater quality and quantity, multi-purpose design of stormwater facilities can add aesthetic value to the city by providing varied landscaping, visually appealing pavement design and enhanced community spaces. They can also be combined with traffic calming features.*

*Stormwater tools can add health and value to the urban ecology by enhancing the linkage of existing parkways and parks for improved aesthetics and neighborhood community spaces. In addition, these localized vegetated areas can create new habitat for wildlife, particularly birds and butterflies. Finally, by reducing total stormwater flows, the use of stormwater management tools may decrease the cost to the City of pumping and treating stormwater.*

**Pg 188, Source Control of Stormwater Infiltration or Reuse and Supports LID Techniques:**

*Development or redevelopment projects disturbing 5,000 square feet or more of the ground surface are required to manage stormwater on-site. Land disturbing activities include, but are not limited to, clearing, grading, filling excavation, or the addition or replacement of impervious surfaces. All projects must complete a stormwater control plan, those projects served by separate stormwater sewers must achieve LEED SS6.2 and those served by the combined sewer system must achieve LEED SS6.1.*

**Pg 189,** Includes Projects and Programs to Ensure Effective Implementation of Stormwater Resource Plan, Supports LID Techniques and Multiple Benefits:

*The stormwater management tools mentioned in this manual are highly customizable and can be integrated into a variety of different types of spaces in any of the street types. Opportunity sites include: corner and midblock curb extensions, medians, pork chops, traffic circles and roundabouts, parking lane and sidewalk planters, streetscape plazas, roadway and park edges, the front building edge, street trees, and stand alone raised planters. They may be placed in the roadway on alleys with DPW approval.*

*Stormwater can also be used within landscaping or educational and art features. Designers of these facilities should look for opportunities to combine artistic elements, public art, and educational opportunities with stormwater management.*

**Pg 191,** Control of Stormwater Infiltration or Reuse, Design Criteria for Stormwater BMPs, Reestablish Natural Water Drainage Treatment and Supports LID Techniques:

*Appropriate soils, infiltration media, and infiltration rates should be used for bioinfiltration and infiltration. A complete geotechnical report should be undertaken to determine infiltration rates, soil toxicity and stability, and other factors that will affect the ability and the desirability of infiltration.*

*Stormwater tools can be incorporated into areas of low permeability or where infiltration of stormwater is not desirable if special measures are undertaken. Underdrains should be used in areas where ponding is a concern. The location of the underdrain is an important consideration: if placed higher in a facility, the stored water below the perforated pipe will be infiltrated; if placed at the bottom of a sealed system, the perforated pipe will release the stored water slowly over time. All BMPs must have an approved overflow location for discharge. Approved locations are catch basins and outfalls.*